



SEQUENCE LISTING

<110> CHOO, Yen
ULLMAN, Christopher G.

<120> MOLECULAR SWITCHES

<130> 8325-2004 / G8-US1

<140> 09/996,484

<141> 2001-11-28

<160> 64

<170> PatentIn Ver. 2.0

<210> 1

<211> 995

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:
TFIIIA/Zif-VP16

<400> 1

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ctttcgccga ctgcggcgct gcttataaca agaactggaa actgcaggcg catctgtgca 120
aacacacagg agagaaacca ttccatgta aggaagaagg atgtgagaaa ggctttacct 180
cgcttcatca cttaaccgc cactcactca ctcatctgg cgagaaaaac ttcacatgtg 240
actcggatgg atgtgacttg agatttacta caaaggcaaa catgaagaag cactttaaca 300
gattccataa catcaagatc tgcgtctatg tgtgccattt tgagaactgt ggcaaagcat 360
tcaagaaaca caatcaatta aaggttcatc agttcagtca cacacagcag ctgccgtatg 420
cttgccctgt cgagtcctgc gatcgccgct tttctcgctc ggatgagctt acccgccata 480
tcggcatcca cacaggccag aagcccttcc agtgtcgaat ctgcatgcgt aacttcagtc 540
gtagtacca cttaccacc cacatccgca cccacacagg cgagaagcct ttgacctgtg 600
acatttgtgg gaggaagttt gccaggagtg atgaacgcaa gaggcatacc aaaatccatt 660
taagacagaa ggacgcggcc gcactcgagc ggaattccgg cccaaaaaag aagagaaaagg 720
tcgccccccc gaccgatgtc agcctggggg acgagctcca cttagacggc gaggacgtgg 780
cgatggcgca tgccgacgcg ctagacgatt tcgatctgga catgttgggg gacggggatt 840
ccccggggcc gggatttacc ccccacgact ccgcccccta cggcgctctg gatacggccg 900
acttcgagtt tgagcagatg tttaccgatg cccttggaaat tgacgagtag ggtggggaac 960
aaaaacttat ttctgaagaa gatctgtaag gatcc 995
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<210> 2

<211> 947

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:TFIIIA/Zif-VP64

<400> 2

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ctttcgccga ctgcggcgct gcttataaca agaactggaa actgcaggcg catctgtgca 120
aacacacagg agagaaacca ttccatgta aggaagaagg atgtgagaaa ggctttacct 180
cgcttcatca cttaaccgc cactcactca ctcatctgg cgagaaaaac ttcacatgtg 240
actcggatgg atgtgacttg agatttacta caaaggcaaa catgaagaag cactttaaca 300
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gattccataa catcaagatc tgcgtctatg tgtgccattt tgagaactgt ggcaaagcat 360
tcaagaaaca caatcaatta aagggttcac agttcagtcac cacacagcag ctgccgtatg 420
cttgccctgt cgagtcctgc gatcgccgct tttctcgctc ggatgagctt acccgccata 480
tccgcatcca cacaggccag aagcccttcc agtgtcgaa ctgcatgcgt aacttcagtc 540
gtagtgaacca ccttaccacc cacatccgca cccacacagg cgagaagcct tttgcctgtg 600
acatttgtgg gaggaagttt gccaggagtg atgaacgcaa gaggcatacc aaaatccatt 660
taagacagaa ggacgcggcc gcactcgagc ggaattccgg cccaaaaaag aagagaaagg 720
tcgaacttca gctgacttcg gatgcattag atgactttga cttagatatg ctaggatctg 780
acgcgctaga cgatttcgat ctggacatgt tgggcagcga tgctctggac gatttcgatt 840
tagatatgct tggctcggat gccctggatg acttcgacct cgacatgctg tcaagtcagc 900
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<210> 3

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: TFIIA/Zif
binding site

<400> 3

tgcgtgggcg tgtacctgga tgggagacc

29

<210> 4

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
framework

<220>

<221> SITE

<222> (1)..(2)

<223> can be present or absent; Xaa = any amino acid

<220>

<221> SITE

<222> (4)..(8)

<223> Xaa = any amino acid

<220>

<221> SITE

<222> (5)..(8)

<223> can be present or absent

<220>

<221> SITE

<222> (10)..(23)

<223> Xaa = any amino acid

<220>

<221> SITE

<222> (19)..(23)

<223> can be present or absent

<220>
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 <222> (25)..(30)
 <223> Xaa = any amino acid

<220>
 <221> SITE
 <222> (28)..(30)
 <223> can be present or absent

<220>
 <221> SITE
 <222> (31)
 <223> Xaa = His or Cys

<400> 4
 Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa His Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 20 25 30

<210> 5
 <211> 24
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: zinc finger
 binding motif

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 <221> SITE
 <222> (1)
 <223> Xaa = any amino acid

<220>
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 <222> (3)..(6)
 <223> Xaa = any amino acid

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 <222> (5)..(6)
 <223> may be present or absent

<220>
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 <222> (8)..(10)
 <223> Xaa = any amino acid

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 <223> may be present or absent

<220>

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<223> Xaa = any amino acid

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<223> Xaa = any amino acid

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<222> (21)..(23)
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<400> 5
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1 5 10 15

Leu Xaa Xaa His Xaa Xaa Xaa His
20

<210> 6
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: linker

<400> 6
Thr Gly Glu Lys
1

<210> 7
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: linker

<400> 7
Thr Gly Glu Lys Pro
1 5

<210> 8
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: consensus
structure

<400> 8

Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Lys Ser Asp
 1 5 10 15

Leu Val Lys His Gln Arg Thr His Thr Gly
 20 25

<210> 9
 <211> 29
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: consensus
 structure

<400> 9
 Pro Tyr Lys Cys Ser Glu Cys Gly Lys Ala Phe Ser Gln Lys Ser Asn
 1 5 10 15

Leu Thr Arg His Gln Arg Ile His Thr Gly Glu Lys Pro
 20 25

<210> 10
 <211> 6
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: leader
 peptide

<400> 10
 Met Ala Glu Glu Lys Pro
 1 5

<210> 11
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: plant
 translational initiation sequence

<400> 11
 aaggagatat aacaatg

17

<210> 12
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: plant
 translational initiation sequence

<400> 12
 gtcgaccatg 10

<210> 13
 <211> 60
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 13
 ctcctgcagt tggacctgtg ccatggccgg ctgggccgca tagaatggaa caactaaagc 60

<210> 14
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide target

<400> 14
 aaaaaaggcg 10

<210> 15
 <211> 16
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide target

<400> 15
 aaaaaaggcg aaaaaa 16

<210> 16
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

<400> 16
 Arg Ser Asp Glu Leu Thr Arg
 1 5

<210> 17
 <211> 7
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 <213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 17
Arg Ser Asp Asp Leu Ser Thr
1 5

<210> 18
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 18
Arg Ser Asp Asp Leu Ser Val
1 5

<210> 19
<211> 7
<212> PRT
<213> Artificial Sequence

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<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 19
Arg Ser Asp Asp Leu Ser Gln
1 5

<210> 20
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 20
Thr Asn Asn Thr Arg Ile Lys
1 5

<210> 21
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger

binding domain

<400> 21

His Lys Ala Thr Arg Ile Lys
1 5

<210> 22

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 22

Thr Asp Lys Val Arg Lys Lys
1 5

<210> 23

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 23

His Asn Ala Ser Arg Ile Asn
1 5

<210> 24

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 24

Thr Asn Asn Ser Arg Lys Lys
1 5

<210> 25

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 25
 Thr Asn Ala Thr Arg Lys Lys
 1 5
 o

<210> 26
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

<400> 26
 Thr Arg Asn Thr Arg Lys Asn
 1 5

<210> 27
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

<400> 27
 Thr Asn Asn Ser Arg Lys Asn
 1 5

<210> 28
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 28
 tataaaaaaa ggcgtgtcac agtcagtcca cagctc 36

<210> 29
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 29
 tataaaaaaa ggcgaaaaaa tcacagtcag tccacagtc 40

<210> 30

<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 30

Arg Ser Asp Glu Leu Thr Arg His Ile Arg Ile His
1 5 10

<210> 31
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 31

Arg Ser Asp Thr Leu Ser Val His Ile Arg Thr His
1 5 10

<210> 32
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 32

His Asn Ala His Arg Lys Thr His Thr Lys Ile His
1 5 10

<210> 33
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 33

Arg Ser Asp His Leu Ser Val His Ile Arg Thr His
1 5 10

<210> 34
<211> 16
<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger binding domain

<400> 34

Lys	Lys	Phe	Ala	His	Ser	Ala	His	Arg	Lys	Thr	His	Thr	Lys	Ile	His
1				5					10					15	

<210> 35

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligonucleotide

<400> 35

tatacaagct	tggcgatcac	agtcagtcca	cacgtc
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36

<210> 36

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: DNA library

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<221> misc_feature

<222> (7)

<223> "n" is C or T

<220>

<221> misc_feature

<222> (8)

<223> "n" is G or A

<220>

<221> misc_feature

<222> (9)

<223> "n" is C or T

<220>

<221> misc_feature

<222> (10)

<223> "n" is G or A

<220>

<221> misc_feature

<222> (11)

<223> "n" is C or T

<400> 36

tatagtnnnn	nggcgatcac	agtcagtcca	cacgtc
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36

<210> 37
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 37
Arg Ser Asp His Leu Ser Lys His Ile Arg Thr His
1 5 10

<210> 38
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 38
Lys Lys Phe Ala Arg Ser Gln Thr Arg Ile Asn His Thr Lys Ile His
1 5 10 15

<210> 39
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 39
Arg Ser Asp His Leu Ser Glu His Ile Arg Thr His
1 5 10

<210> 40
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 40
Thr Arg Asn Ala Arg Thr Lys His Thr Lys Ile His
1 5 10

<210> 41
<211> 12

<212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

 <400> 41
 Arg Ser Asp His Leu Ser Asn His Ile Arg Thr His
 1 5 10

 <210> 42
 <211> 12
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

 <400> 42
 Arg Asn Asp Thr Arg Lys Thr His Thr Lys Ile His
 1 5 10

 <210> 43
 <211> 12
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

 <400> 43
 Arg Ser Asp Asn Leu Ser Thr His Ile Arg Thr His
 1 5 10

 <210> 44
 <211> 16
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

 <400> 44
 Lys Lys Phe Ala His Ser Asn Thr Arg Lys Asn His Thr Lys Ile His
 1 5 10 15

 <210> 45
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
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 oligonucleotide

<400> 45
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<210> 46
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
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 oligonucleotide

<400> 46
 tatagttgta tggcgatcac agtcagtcca cacgtc 36

<210> 47
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 47
 tatagtcgta cggcgatcac agtcagtcca cacgtc 36

<210> 48
 <211> 14
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA target

<400> 48
 aaaaagcgga aaaa 14

<210> 49
 <211> 7
 <212> PRT
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<220>
 <223> Description of Artificial Sequence: zinc finger
 binding domain

<400> 49
 Gln Ser Arg Ser Leu Ile Gln
 1 5

<210> 50
 <211> 7

<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 50

Gln Arg Asp Ser Leu Ser Arg
1 5

<210> 51

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 51

Arg Ser Asp Glu Arg Lys Arg
1 5

<210> 52

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 52

Arg Ser Asp Val Leu Ser Thr
1 5

<210> 53

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: zinc finger
binding domain

<400> 53

Thr Arg Ser Ser Arg Lys Lys
1 5

<210> 54

<211> 14

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: operator site

 <220>
 <221> misc_feature
 <222> (5)
 <223> "n" is G or T

 <220>
 <221> misc_feature
 <222> (6)..(9)
 <223> "n" is A, C, G or T

 <220>
 <221> misc_feature
 <222> (10)
 <223> "n" is A or T

 <400> 54
 acaannnnnn ttgt 14

 <210> 55
 <211> 58
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: target DNA
 sequence library

 <220>
 <221> misc_feature
 <222> (28)..(31)
 <223> "n" is A, C, G or T

 <400> 55
 gtcggatcct gtctgaggtg agacaatnnn nattgtgtct tccgacgtcg aattcgcg 58

 <210> 56
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer A

 <400> 56
 gtcggatcct gtctgaggtg ag 22

 <210> 57
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer B

 <400> 57

cgcggaattcg acgtcggaag ac 22

<210> 58
 <211> 14
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: operator
 sequence

<400> 58
 acaataaata ttgt 14

<210> 59
 <211> 14
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: plant
 translational initiation sequence

<400> 59
 aaggagatat aaca 14

<210> 60
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 protein-binding motif

<220>
 <221> SITE
 <222> (2)
 <223> Xaa = any amino acid

<220>
 <221> SITE
 <222> (4)
 <223> Xaa = any amino acid

<400> 60
 Leu Xaa Cys Xaa Glu
 1 5

<210> 61
 <211> 11
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA

recognition site

<400> 61
ggatgggaga c

11

<210> 62
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: DNA
recognition site

<400> 62
gcgtgggcgt

10

<210> 63
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger 4
of TFIIIA

<400> 63
Asn Ile Lys Ile Cys Val Tyr Val Cys His Phe Glu Asn Cys Gly Lys
1 5 10 15
Ala Phe Lys Lys His Asn Gln Leu Lys Val His Gln Phe Ser His Thr
20 25 30
Gln Gln Leu Pro
35

<210> 64
<211> 108
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: zinc finger 4
of TFIIIA

<400> 64
aacatcaaga tctgcgtcta tgtgtgccat tttgagaact gtggcaaagc attcaagaaa 60
cacaatcaat taaagggtca tcagttcagt cacacacagc agctgccg 108